

D3 a generally ring shaped side channel portion formed by a flow channel formed in each of said housing and cover portions at least one of said flow channels defining a flow path between said fluid inlet and said single fluid outlet, and said side channel portion tapering on a constant slope axially inward along substantially all of its length toward said impeller from said fluid inlet to said single fluid outlet for reducing the cross-sectional area from said first cross-sectional area to said second cross-sectional area by from about 10% to about 50% and directing fluid back into contact with blade means as said impeller rotates.

REMARKS

The Examiner has rejected claims 1, 4-7 under 35 U.S.C. §103 as being unpatentable over Beare et al. (3,536,412) in view of Australian Patent No. 128,026. Claims 8-20 have been rejected under 35 U.S.C. §103(a) over Beare et al. '412 in view of Liskow '319 and Australian patent '026. The claims as amended, recite an axially inward constant sloped reducing chamber from the inlet opening to the outlet opening. The Australian patent relates to a blower in which an axially constant width chamber is varied along the radial direction from the inlet to the outlet. As can be seen in the '026 patent, this reduction in the passage is significantly greater than the range of ten to fifty percent as set forth in claim 15 in the subject application. Thus, while the Australian reference does teach a radially tapered cross-section, it does not teach or suggest a chamber which is tapered axially in its cross-section as set forth in the subject claims.

With respect to the Beare et al. '412 reference, the section of Figure 2 is taken along line 2-2 of Figure 1. The Examiner states that the channel must be tapered in Beare, et al., but there is no teaching of a continuous taper. Applicant respectfully disagrees that there are any teachings in Beare et al. that disclose a tapered channel.

In particular, the section taken along line 2-2, shows a channel portion on the left, but the section of the channel portion on the right is taken between the inlet 36 and the outlet 37. This shows that there is a small transition area of the section of chamber between the inlet 36 and outlet 37, but does not show whether the chamber is tapered at the outlet or from the inlet to the outlet. Additionally, the specification does not make any teaching or suggestion of a tapered channel.

Therefore, it is respectfully submitted that there are no teachings in Beare et al., whether taken alone or in combination with the Australian reference, which would teach a continuously axially tapered channel. Therefore, it is respectfully submitted that these references do not teach, suggest, or render obvious the pump of the present invention which includes a chamber tapered in the axial direction.

The '319 patent to Liskow teaches away from a continuous inward taper from a first inlet and to an outlet end. In fact, in column 4, lines 13-30, the cross-section of the front supply passage "increases usually after the suction opening 42 ... and then remains constant up to the pressure opening 30". The Liskow '319 patent also states that it is also possible to substantially reduce the cross-section as the supply passes toward the suction opening, thus teaching the opposite of the present invention. Thus, the patent to Liskow teaches an opening which is not constant and may increase toward the pressure opening. This is in contradistinction to the present invention which teaches an axially inwardly tapered chamber wherein the cross-sectional area of the fluid inlet is greater than the cross-sectional area of the fluid outlet. Therefore, it is respectfully submitted that Liskow does not add any teachings which would further enhance or add anything to the combination of the Beare, et al and Australian references set forth above. The references do not teach or suggest an axial continuous taper from an inlet end to an outlet end of a pump.


It is respectfully submitted that since the Liskow reference teaches away from a continuous taper, it fails to include teachings which are properly combinable with Beare et al. and/or Australian '026 to render the claimed invention obvious. Thus, since Beare et al. and Australian '026 fail to teach or suggest axial tapering of a channel, it is submitted that the subject invention is patentably distinguishable over these references and is properly allowable.

Therefore, it is respectfully submitted that the claims as amended are patentably distinguishable over the Liskow '319, Beare et al. '412, and the Australian 128,026 references whether taken alone or in combination.

Applicant respectfully requests allowance of the subject application. Should the Examiner have any questions, he is urged to feel free to contact the undersigned attorney at (248) 364-4300.

Respectfully submitted,

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Dated: August 23, 2001